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ABSTRACT

This study examined deaf children's reading comprehension in relation to the linguistic structures of their sign languages of fluency and the amount of sign language input they had received. Children (n=47) born severely or profoundly deaf, in age groups from 7 to 15 years and all attending day classes in which the English-structured Manually Coded English (MCE) was used, were compared. Roughly half lived in deaf families where sign language (usually American Sign Language) was constantly used, while the others lived in hearing families with sporadic use of sign language (usually MCE). Reading and sign language comprehension were found to increase between the ages of 7 and 12 but not afterward. Children who used sign language constantly at home outperformed others on tests of reading and American Sign Language (ASL) comprehension, but not MCE comprehension, suggesting that deaf children's reading comprehension is based in their language comprehension regardless of linguistic structure, as is the case with hearing children. Reading comprehension was predicted equally well by ASL and MCE comprehension. Five figures and two tables are included. (PB)

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Deaf Children's Reading Comprehension in Relation to Sign Language Structure and Input*

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Poster presented at the Society for Research in Child Development
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Abstract

This study examines deaf children's reading comprehension in relation to two factors, (1) the linguistic structure of the sign language they know, and (2) the amount of sign language input they have received. If reading development is facilitated by using a sign language with an "English" structure, rather than one with a "non-English" structure, then deaf children's comprehension of manually coded English, MCE, should better predict their reading skill than comprehension of American Sign Language, ASL. Alternatively, language input in general may be a critical factor in deaf children's reading development, because their language experience is quite limited in contrast to that of normally hearing children.

To answer these questions, reading and sign language comprehension was compared in 47 deaf children at three age levels, 7-9, 10-12, and 13-15. All were born severely or profoundly deaf and attended the same day classes in which MCE was used for communication. Half the children lived in deaf families where sign language was used all the time (either ASL or PSE -- Pidgin Sign English), and half lived in hearing families where sign language was used sporadically (usually MCE). The input groups were matched for age, sex, and nonverbal IQ.

The children's reading and sign language comprehension increased between the ages of 7 to 12 but not afterward. Children who used sign language all the time outperformed their peers with more restricted input on measures of ASL and reading comprehension, but not MCE comprehension. Reading comprehension was predicted equally well by ASL and MCE comprehension. The results show that both "non-English" and "English" sign language can lead to reading comprehension. More significantly, the amount of sign language input deaf children receive is an important factor in their reading development. The findings suggest that deaf children's reading comprehension is grounded in their language comprehension, as is the case for normally hearing children.

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Deaf Children's Reading Comprehension in Relation to
Sign Language Structure and Input

Background

Deaf children often do not achieve functional literacy. One possible reason is an unfamiliarity with English structure before learning to read. Educators created "sign systems" to represent English structure, known as Manually Coded English (MCE) hoping to improve deaf children's reading skill. Although MCE gestures English structure, it is not a natural language. The sign language spontaneously acquired by deaf children who have deaf parents is a natural language known as American Sign Language (ASL), but its structure is not English.

Questions

(1) If reading development is facilitated by knowing a sign language with "English" structure, then deaf children's comprehension of MCE should better predict reading skill than ASL comprehension.

(2) If reading development is facilitated by language proficiency in general, then the richness of the child's sign language environment should predict reading skill. Specifically, deaf children whose deaf parents sign to them all the time should outperform deaf children whose normally hearing parents sign to them less often.

Hypothesis Testing

The sign language and reading comprehension skills of two groups of deaf children were tested.

(1) Half the children lived in deaf families where everyone signed all the time (usually ASL).

(2) Half the children lived in normally hearing families where the frequency of signing was highly variable.

(3) The children's comprehension of stories given in ASL, MCE, and print was measured and compared.

Outcomes

(1) Comprehension of ASL predicts reading skill as well as comprehension of MCE.

(2) Deaf children living in "rich" sign language environments show superior reading skill regardless of sign language structure as compared to those in "impoverished" sign language environments.

Aims

(1) To determine whether comprehension of "English signing," or MCE, better predicts reading comprehension than comprehension of "non-English signing," or ASL.

(2) To determine whether the "amount" of sign language input deaf children receive affects their sign language and reading comprehension.

Subjects and General Method

47 DEAF CHILDREN DIVIDED INTO THREE AGE GROUPS

7-9 years
10-12 years
13-15 years

16 subjects in each group
8 boys and 8 girls in each group

THE DEAF CHILDREN ATTENDED THE SAME DAY SCHOOLS

-teachers communicated in MCE and speech
-all children first began school by 3 years of age

HALF THE DEAF CHILDREN AT EACH AGE LIVED IN DEAF FAMILIES

--with deaf parents who communicated in sign language
--many had deaf siblings who communicated in sign language
--the sign language was typically ASL or PSE (Pidign Sign English)

HALF THE DEAF CHILDREN AT EACH AGE LEVEL LIVED IN HEARING FAMILIES

--with hearing parents who sometimes communicated in sign language
in 1/3 of the families both parents knew some sign
in 1/3 of the families only the mother knew some sign
in 1/3 of the families no one knew any sign
--the sign used was typically MCE, Manually Coded English

THE "INPUT" GROUPS WERE MATCHED FOR:

-age
-sex
-hearing loss
-nonverbal intelligence
-Table 1 shows the subjects' background characteristics

Table 1

BACKGROUND CHARACTERISTICS OF THE GROUPS

Sign Language Environment	Mean Age	Sex M;F	Mean Hearing Level	Mean Block Design[1]	Mean Picture Arrngmnt[1]
Deaf Families	8;3	4;3	92 dB	10.14	11.43
Hearing Families	8;8	4;4	100 dB	10.00	12.14
Deaf Families	11;1	4;4	95 dB	12.42	12.60
Hearing Families	11;9	4,4	92 dB	11.30	11.57
Deaf Families	14;3	4;4	93 dB	12.57	12.71
Hearing Families	14;2	4;4	98 dB	12.29	12.14

[1] Nonverbal subtest of the WISC

EACH SUBJECT WAS TESTED INDIVIDUALLY

One examiner was fluent in ASL
Another examiner was fluent in MCE
Testing took place at school

TASK ADMINISTRATION

Story Comprehension

-one videotaped story was given in ASL
-another videotaped story was given in MCE
-children were asked questions after each story
-questions were given in the same sign language as the story
-the child responded however she or he pleased
-the child's response was videotaped

Reading Comprehension

-one story was given in print
---comprehension questions were also given in print
---the child responded however she or he pleased
-reading comprehension subtest of the Stanford was administered

Results

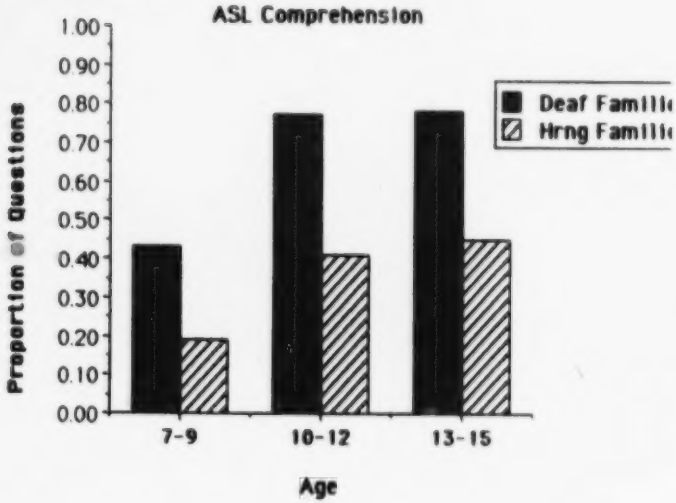
ASL Comprehension

Figure 1 shows the children's comprehension of the ASL stories as a function of age and sign language environment.

(1) Children from deaf families comprehend ASL better than those from normally hearing families, $p<.001$.

(2) The children's ASL comprehension increases between the ages of 7 and 12, but not afterward, regardless of sign language environment, $p<.001$.

FIGURE 1



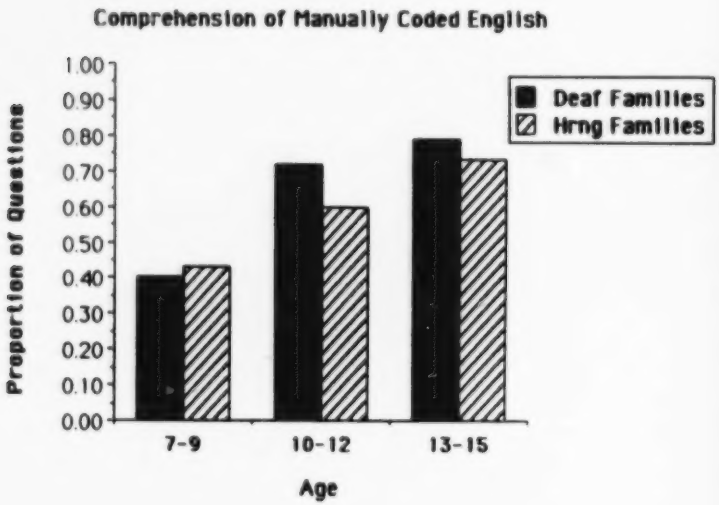
MCE Comprehension

Figure 2 shows the children's comprehension of the MCE stories as a function of age and sign language environment.

(1) The sign language environment in which the children live does not affect their MCE comprehension.

(2) The children's MCE comprehension increases between the ages of 7 and 12, but not afterward, $p < .001$.

FIGURE 2



Reading Comprehension

Figure 3 shows the children's reading comprehension of the short story as a function of sign language environment and age.

(1) The deaf children living in deaf families comprehend the short story given in print better than those living in hearing families between the ages of 10 and 15, but not at the younger ages, 7 to 9, $p < .01$.

FIGURE 3

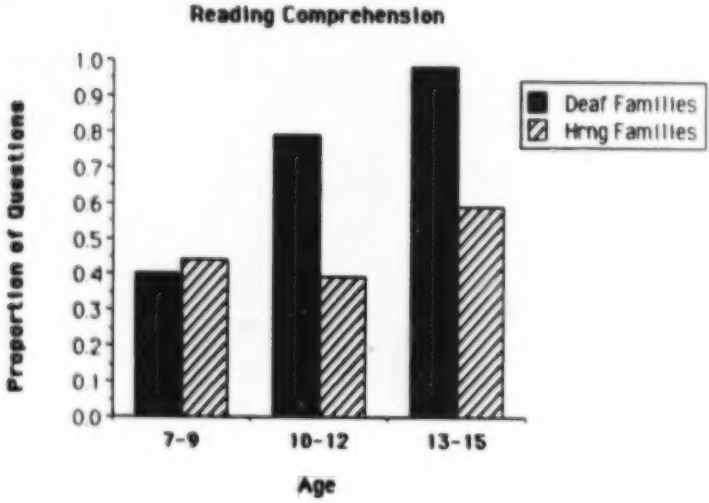
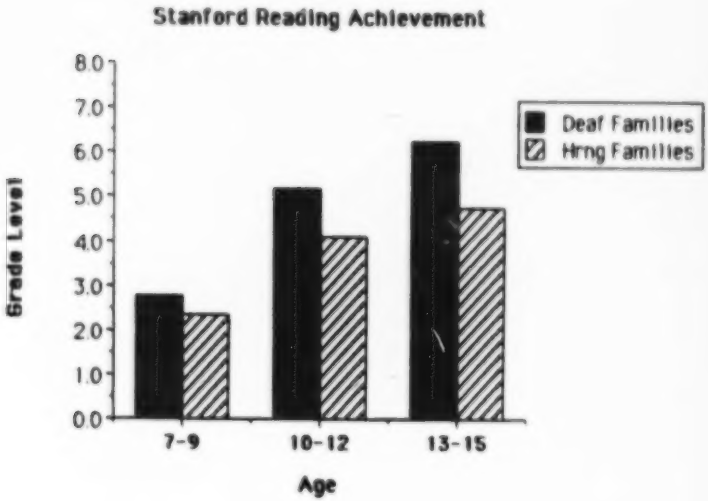


Figure 4 shows the children's performance on the reading comprehension subtest of the Stanford.

(1) The children living in deaf families outperformed those living in normally hearing families, regardless of age, $p<.05$.

(2) The children's reading achievement increases with age, especially between the ages of 7 and 12, $p<.001$, regardless of sign language enviornment

FIGURE 4



Comparing the Children's Language Comprehension

Figure 5 shows the children's sign language and reading comprehension as a function of sign language environment (collapsed across age).

(1) Children living in deaf families show comparable comprehension skill across both kinds of sign language and print.

(2) Children living in deaf families comprehend stories in ASL and print better than those living in hearing families, $p<.01$.

(3) Children living in hearing families comprehend MCE signicantly better than both ASL and print.

FIGURE 5

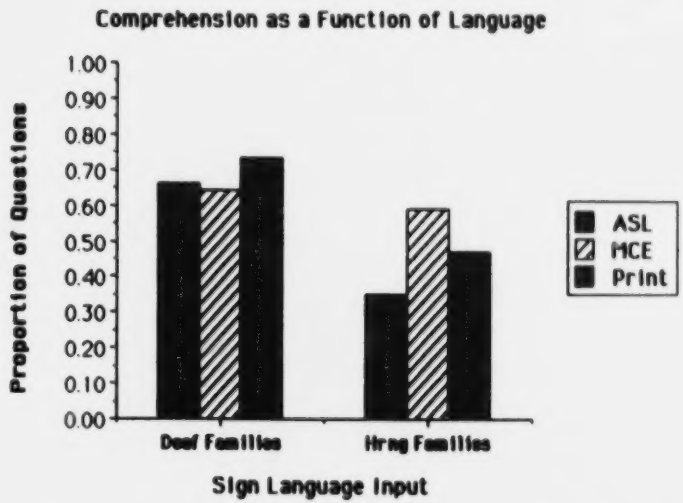


Table 2 shows the correlation between the children's sign language comprehension and reading comprehension as a function of type of sign,

(1) Comprehension of both types of sign predicts reading comprehension.

Table 2

Correlation between Reading Comprehension and Sign Language Comprehension

Sign Language	READING TASK	
	Short Story	Stanford
ASL	.62**	.68**
MCE	.67**	.58**

**p<.01

Conclusions

(1) The frequency with which deaf children (who use sign for inter-personal communication) are talked to in sign language significantly enchances their reading comprehension.

(2) Comprehension of a sign language with a structure different from English predicts reading skill as well as comprehension of a sign language with an "English" structure.